

**Amendment Under 37 C.F.R. § 1.111**  
**U.S. Serial No. 09/780,484**

Applicants hereby affirm the election of group I, claims 1, 2 and 8-10, and reserve the right to request rejoinder of the method claims, upon indication of the product claims (i.e., independent claims 1 and 8) as being allowable. See, MPEP §821.04

**Claim Rejection Under 35 U.S.C. § 112**

Claims 1, 2, and 8-10 stand rejected under 35 U.S.C. § 112, second paragraph, for the reasons set forth at page 3 of the Official Action.

Particularly, the Examiner asserts that claims 1 and 8 are allegedly indefinite because the presence of the JIS hardness test, recited in these claims, is not readily available in the English language.

In this regard, Applicants direct the Examiner's attention to Applicants specification at page 7, lines 20-23, where the spring-type tester A, type (JIS-K-6301) is discussed.

Further, attached for the Examiner's convenience is an English translation of Japanese Industrial Standard for the physical testing methods of vulcanized rubber. Therein, the spring type hardness test JIS-K-6301 is discussed. The portion relating to the hardness measurement is indicated in parentheses. As shown on the last page of this document, the English translation of this document was published in 1977. Therefore, this test was known to those skilled in the art at the time the present application was filed (i.e., February 12, 2001). Thus, it is submitted that hardness test JIS-K-6301 need not be described in the specification. The claims as written clearly define the meets and bounds of the invention. Accordingly, withdrawal of this rejection is in order and it is respectfully requested.

**Claims Rejections Under 35 U.S.C. § 102/103**

Claims 1, 8 and 9 stand rejected under 35 U.S.C. 102(b) as anticipated by or, in the alternative, under 35 U.S.C. 103(a) as obvious over Mayuzumi et al (U.S. Patent No. 6,023,597). This rejection is traversed for the following reasons.

The present invention relates to a foamed rubber which is light in weight and has a hardness comparable to that of unfoamed rubber.

In one aspect of the invention, and as set forth in independent claim 1, a foamed rubber is provided. The foamed rubber has an average cell diameter of 1-150 $\mu$ m, a hardness as determined according to JIS-K-6301 of 30-100 and a density of 0.7-1.1 kg/l.

Mayuzumi et al relates to a cellular conductive roller employed in an electrophotographic process. The roller has open cells 30 on the surface which are filled with conductive powder 32. Closed cells 31 are disposed in the roller and are not filled. Col. 2, lines 33-36. The roller is formed of an organic foaming agent kneaded with a rubber blend so as to make a tube and vulcanized while foaming. The cells obtained have a size of 100 $\mu$ m. Col. 5, lines 39-45.

Mayuzumi et al, however, does not relate to the same field of invention, much less the solution Applicants have found. In this regard, we note that the Examiner has ignored the hardness and density of the presently claimed rubber and simply asserted that these recitations would be inherent in a foam article having the claimed cell size.

The Examiner's position is improper. The legal standard for inherency is well established. In order for prior art to anticipate or render a claimed invention obvious the inherency must be certain. Ex parte Cyba, 155 USPQ 756 (POBA 1966). The fact that a prior

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art article "may" inherently have the characteristics of the claimed product is not sufficient. Ex parte Skinner, 2 USPQ2d 1788 (BPAI 1986).

In this regard, Mayuzumi et al does not disclose either (i) a blending ratio of the components in rubber blends during the production process of the sponge rubbers (accordingly, the composition of the obtained sponge rubbers could not be determined) nor (ii) the hardness and density of the obtained sponge rubbers. Accordingly, the disclosure of Mayuzumi et al does not allow a direct comparison of the rubber of Mayuzumi et al and the present claims. Nonetheless, it does not follow that the sponge rubbers of Mayuzumi et al would have the advantageous characteristics of the claimed invention. Thus, when the proper standards for anticipation and obviousness are considered, one reaches the inevitable conclusion that the claimed subject matter would not have been obvious over Mayuzumi et al. From the foregoing, it should be apparent that inherency cannot be used to justify a rejection based on anticipation or obviousness.

For at least the above reasons, withdrawal of this rejection is in order and it is respectfully requested.

Claims 1, 2, 8, and 9 stand rejected under 35 U.S.C. 102(b) as anticipated by or, in the alternative, under 35 U.S.C. 103(a) as obvious over JP '459 (Japanese Patent Document JP-11-080459). This rejection is traversed for the following reasons.

JP '459 has been cited as disclosing a sponge roller including a sponge rubber disposed around the outer circumference of a metal core. JP '459 allegedly discloses the sponge rubber as having an average cell size of 150 microns or less, wherein the material is ethylene-alpha-olefin-

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non-conjugated diene copolymer. The Examiner states that the cell size dictates the density and hardness of the foam. However, the hardness of the foam could be defined by hardness of a material to foamed (before foaming) and the extent to which the material is allowed to foam.

JP '459 simply does not disclose or fairly suggest a foamed rubber having a hardness as determined to JIS-K-6301 of 30-100. In this regard, JP '459 discloses a sponge rubber having a an Asker C hardness ranging from 33-40. See, the attached copy of JP '459.

*drop* The range of Asker C hardness set forth in JP '459 is a hardness defined by SRIS<sup>1</sup>. However, the Asker C hardness test is very different from JIS-K-6301. In this regard, the Examiner's attention is directed to the attached document entitled "Packing Land," annotated in English. As demonstrated in the "Comparison Table of Rubber Hardness"<sup>2</sup> of this document, an Asker C hardness reading of 33-40 does not overlap a JIS-K-6301A hardness reading of 30-100, as claimed. Thus, clearly the sponge rubber of JP'459 does not have the hardness of the foamed rubber claimed. Accordingly, withdrawal of this rejection is in order and it is respectfully requested.

Claim 10 stands rejected under 35 U.S.C. §103(a) as being unpatentable over JP '459 or Mayuzumi et al as applied to claim 8, in view of Ikeda et al (U.S. Patent No. 5,455,296).

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<sup>1</sup> SRIS is the standard specification provided by a Japanese association NIHON GOMU KYOKAI for rubber.

<sup>2</sup> The "Comparison Table of Rubber Hardness" is cited in a home page held on the Internet by MoreDome and run by Japanese companies "kabusikigaisya nikkin," "kabusikigaisya nikkinkagakukogyosyo," and "shin-nippon oil seal" (or the home page "Packing Land"). URL of this home page is "<http://www.packing.co.jp/SIRYOU/gomukoudol.htm>." The above MetroDome is explained in the page of "[http://www.packing.co.jp/unei/unei\\_1.htm](http://www.packing.co.jp/unei/unei_1.htm)".

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JP '459 and Mayuzumi et al have been discussed in detail above. Iketa et al relates to a rubber member for paper-feeding machine parts as in copying machines, computer printers, word processors, facsimile machines and the like. Col. 1, lines 9-12. First, it appears that the silicon rubber placed on the core mandrel is indeed solid, and not a foam as in the present invention. Second, and more importantly, Iketa et al does not cure the above-described deficiencies in either JP '459 and Mayuzumi et al (e.g., cell diameter, hardness and density). Thus, withdrawal of this rejection is respectfully requested.

Claims 1, 2 and 8-10 stand rejected under 35 U.S.C. 103(a) as being unpatentable over Okita et al (U.S. Patent No. 6,132,847). This rejection is traversed for the following reasons.

Okita et al relates to a foamed rubber extruded product formed of a vulcanized rubber blend including a vulcanizable ethylene-propylene-type rubber (EPDM) as a starting rubber and a pyrolytic foaming agent. Col. 1, lines 5-9. As recognized by the Examiner, Okita et al is silent with respect to the average cell size.

A particular parameter must first be recognized as a result-effective variable (i.e., a variable which achieves a recognized result) before the determination of the optimum or workable ranges of the variable may be characterized as routine experimentation. In re Antonie, 195 USPQ 6 (CCPA 1977).

Here, Okita et al does not disclose the characteristic feature of the foamed rubber (i.e., the purposeful selection of range of cell diameter claimed). As depicted in attached Fig. A, the relation of Tensile Strength versus Cell Diameter is diagramed. Example 1 and Comparative

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Examples 1 and 2, as set forth in Applicants' specification, are represented by symbols "O" "□", respectively.

The horizontal axis of Fig. A denotes the Cell Diameter, and the vertical axis denotes Tensile Strength/Density, respectively. Herein, the formulation of Example 1 is the same as the formulation of Comparative Examples 1 and 2, excluding the blowing agent employed.

The results of these examples are reproduced in Table A below.

Table A

	Example 1	Comparative Example 1	Comparative Example 2
Density	0.97	0.87	0.83
Cell Diameter	30	210	250
Tensile Strength	9.7	3.5	5.4
Tensile/Density	10	4.02	6.50

If the Tensile Strength is independent of Cell Diameter, values of vertical axis (Tensile/Density) should be nearly equal values, irrespective of values on the horizontal axis (Cell Diameter). However, the actual result are not equal in value. The foamed rubber with smaller cell diameter (Example 1) showed a larger tensile/density than the foamed rubbers with larger cell diameter (Comparative Examples 1 and 2). Thus, Applicants have unexpectedly found that the finer the cell diameter of a foamed rubber is, the higher the tensile strength per unit of density thereof is. Clearly, Okita et al does not even address cell size, much less the claimed cell size of 1-150 $\mu$ m at which the unexpectedly higher tensile strength is realized. Moreover, Okita et al does not recognize the improved properties, including surface hardness,

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reduction in weight and a smooth surface attained through the claimed cell diameter in combination with the hardness and density claimed.

For the foregoing reasons, withdrawal of this rejection is in order and it is respectfully requested.

In view of the above, reconsideration and allowance of this application are now believed to be in order, and such actions are hereby solicited. If any points remain in issue which the Examiner feels may be best resolved through a personal or telephone interview, the Examiner is kindly requested to contact the undersigned at the telephone number listed below.

The USPTO is directed and authorized to charge all required fees, except for the Issue Fee and the Publication Fee, to Deposit Account No. 19-4880. Please also credit any overpayments to said Deposit Account.

Respectfully submitted,

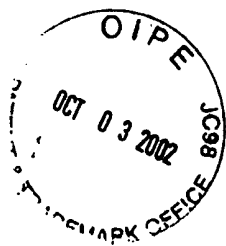


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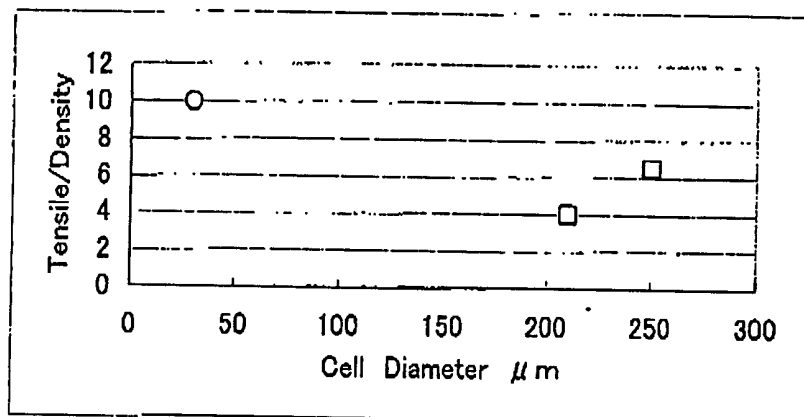


FIG. A